Claims:

1. A method of thermal conditioning of a biological cell, comprising:
culturing the cell in a culture medium at a culturing temperature T_M; and
then conditioning the cell at a conditioning temperature T_K for a conditioning time t_h;
wherein the "thermal equivalent" (WE), expressed by the formula

$$WE = t_h \cdot (T_K - T_M),$$

is in the range 70-300 °K• sec.

2. A method according to claim 1, wherein the conditioning temperature T_K is 65-105 °C, preferably 80-95 °C.

3. A method according to claim 1, wherein the conditioning temperature T_K is always below the boiling point of the culture medium.

4. A method according to claim 1, wherein the conditioning time t_h is 0.5-600 sec, preferably 1-180 sec.

5. A method according to one of the preceding claims, wherein the culturing temperature T_M is 26-42 °C, preferably 30-38 °C.

6. A method according to one of the preceding claims, wherein WE is 90-150 °K• sec.

7. A method according to one of the preceding claims, wherein the biological cell is a gram-negative prokaryote such as E. coli, or a eukaryote such as S. cerevisiae, and WE is 110 ± 20 K.

8. A method according to one of the preceding claims, wherein the biological cell is a gram-positive prokaryote such as B. subtilis, and the WE is 130 $\pm$ 20 K.

9. A method according to one of the preceding claims, wherein the culture medium is a liquid, which liquid medium containing the biological cell is flowed into a capillary for conditioning and,
wherein the conditioning occurs while the cell is disposed in a temperature-controlled segmnet of the capillary at the conditioning temperature, T_K, for the conditioning time, t_K.

10. A method according to claim 9, wherein the volumetric flow in the temperature-controlled segment of the capillary is 0.5-12 mL/sec, preferably 2.5-8.0 mL/sec.

11. A method according to one of the preceding claims, wherein the culturing takes places in a culturing vessel, in particular a bioreactor, and the thermal conditioning takes placein a receiving vessel, in particular a sample collection vessel, into which the culture medium containing the biological cell has been transferred.

12. A method of recovering a component material from a biological cell, comprising the following steps:

(a) culturing the cell in a culture medium;

(b) thermally conditioning the cell according to the method of one of claims 1-11, whereby the component material is liberated from the thermally conditioned cell; and

(c) isolating the liberated component material from the culture medium.

13. A method of quantitative determination of a component material in a biological cell, comprising the following steps:

(a) culturing the cell in a culture medium;

(b) thermally conditioning the cell according to the method of one of claims 1-11, whereby the component material is liberated from the thermally conditioned cell; and

(c) quantitatively determining the liberated component material in the culture medium.

14. A method of qualitative detection of a component material in a biological cell,

comprising the following steps:

(a) culturing the cell in a culture medium;

(b) thermally conditioning the cell according to the method of one of claims 1-11, whereby the component material is liberated from the thermally conditioned cell;

(c) qualitatively detecting the liberated component material in the culture medium.

15. A method according to one of the preceding claims; wherein the component material is an intracellular metabolite, selected from the group consisting of amino acids and their derivatives, amines and their derivatives, carboxylic acids, alcohols, aldehydes, ketones, phosphate esters other than nucleic acids, nucleic acids and congeners, sugars and congeners, lipids, steroids, fatty acids, vitamins, coenzymes, and inorganic ions.

16. An apparatus for conditioning of cells, comprising:

a sample-transferring segment (5),

a sample-collecting device (6), and

at least one capillary (3) which is disposed adjacent to a heat source (4), through which capillary a liquid culture medium is flowed, wherein the capillary has an interior diameter of 0.5-4.5 mm, preferably 1.0-3.0 mm, and the capillary remains in contact with the heat source along a temperature-controlled segment of said capillary, said segment having a length of 50-1550 cm, preferably 90-420 cm.

17. An apparatus for conditioning of cells, according to claim 16, wherein for a "thermal equivalent" of 70-300 °K• sec which is to be transferred, a length of the temperature-controlled capillary segment of about 80-1510 cm is chosen, wherein

(a) for a low volumetric flow rate of about 2.5 mL/sec:

i. at a lower conversion time ("turnover time") of the metabolite of about 0.1 sec, the interior diameter of the capillary is about 0.5 mm;

ii. at an upper conversion time ("turnover rate") of the metabolite of about 2.7 sec, the interior diameter of the capillary is about 2 mm;

and

(b) for a high volumetric flow rate of about 8 mL/sec:

i. at a lower conversion time ("turnover time")
of the metabolite of about 0.1 sec, the interior diameter of the capillary is about 1 mm;

ii. at an upper conversion time ("turnover time")
of the metabolite of about 2.7 sec, the interior diameter of the capillary is about 4 mm.

18. An apparatus for conditioning of cells, according to claim 16 or 17, wherein the cell conditioning apparatus is in the form of a sample-taking device for sampling from a source (1) of the liquid culture medium (2) containing the cell(s).

19. Use of the cell conditioning apparatus according to one of claims 16-18 for recovering a component material from a biological cell, using the method according to claim 12.

20. Use of the cell conditioning apparatus according to one of claims 16-18 for quantitative determination of a component material in a biological cell, using the method according to claim 13.

21. Use of the cell conditioning apparatus according to one of claims 16-18 for qualitative detection of a component material in a biological cell, using the method according to claim 14.